

Utilization of Java Medaka (*Oryzias javanicus*) in ecotoxicological studies

*Shahrizad Yusof and Ahmad Ismail

Department of Biology, Faculty of Science, Universiti Putra Malaysia, 43400 UPM Serdang
Selangor, Malaysia

*Corresponding author. Tel.: +603 89466636; email address: izard@upm.edu.my

An increasing number of chemicals due to human activities enters our environment every day. This study promotes Java medaka (*Oryzias javanicus*) as test organism for the impacts of these chemicals. Java medaka is a small tropical fish native to Malaysia, Indonesia, Singapore, Thailand and Vietnam, commonly found in abundance in estuaries. The fish have been successfully cultured in the laboratory in ambient temperature and controlled photoperiod of 14 hours light and 10 hours dark. Some ecological aspects of the fish in their natural habitat were studied in order to understand their response to chemicals. The fish occur abundantly all year round in the west and south coasts of Peninsular Malaysia. They migrate tidally within a large salinity range (1.2 – 29.0 ppt), making them suitable to represent the coastal environment. The sensitivity of different life stages of Java medaka to environmental pollutants was tested. All life stages of the fish have been utilized and they have shown particular sensitivity. The embryos were sensitive to low concentrations (0.01 – 0.05 ppm) of heavy metals (Cd, Hg, Pb, Cu and Zn) in terms of developmental impairments. In exposure to glyphosate-based herbicide embryonic death was found to be the most prominent response while swimming disorder was observed in the juveniles. Teratogenicity is another developmental endpoints in embryos exposed to the pollutants tested. The responses shown by all the life stages of the fish indicated that this fish species can be a useful to investigate short term and long term effect of pollutants in the future.

Keywords: Java medaka, test organism, pollution, coastal areas, environment